

## 21st-Century Dentistry

A new world of treatments requires a bit less bravery

By Matthew Shulman

Nevin Ireland had his gums fixed twice a few years ago. His first treatment involved peeling back his lower gums with a scalpel to excise bacteria and stitching him up, an uncomfortable and painful experience for the 50-year-old manager of a Utah dinosaur park. While his gums were healing, his periodontist received training in a new laser technology that targets diseased gum tissues without harming healthy ones. So the treatment of his upper gums a few weeks later was virtually pain free.

Such high-tech advances are transforming how patients experience oral care, in some cases shortening their time in the chair and in recovery. Less-invasive implants, digital imaging, and new uses of lasers are also removing some of the anxiety and discomfort often associated with dentistry.

It can be easy to get caught up in the “gee whiz” factor of dazzling new technology, though, and dentists sometimes offer procedures that are neither essential nor cost effective. So each patient should develop a solid, trusting relationship with a dentist, says Gene Antenucci, a spokesman for the Academy of General Dentistry, especially before shelling out for unfamiliar treatments. “It’s also important for the patient to ask questions and to do some outside research,” he adds, when a dentist recommends a costly service.

Ireland’s periodontist was one of a number who have begun laying aside scalpels in favor of the laser-assisted new attachment procedure, or LANAP, a novel treatment for infected gums that the Food and Drug Administration approved in 2004. The pulsing laser can distinguish by color between healthy and diseased gums and zaps away only bacteria and infected tissue, which has a darker pigment than the surrounding healthy gums.

LANAP helps connective tissue and bone form between the gums and teeth, according to a study in the December issue of the *International Journal of Periodontics and Restorative Dentistry*. “There were also signs of a regeneration of diseased root surfaces in all LANAP-treated teeth,” says Raymond Yukna, the study’s lead author and director of advanced periodontal therapies at the University of Colorado School of Dental Medicine. In theory, that means there is less chance of the infection returning.

The laser’s heat also seals the gums with a “thermal blood clot, creating a physical barrier to any bacteria or tissue that could re-create gum pockets,” says Sam Low, an associate dean of the University of Florida College of Dentistry and vice president of the American Academy of Periodontology.

Still, LANAP is unlikely to fully replace traditional gum surgery anytime soon. The laser therapy isn’t demonstrably superior to surgery,

researchers recently reported in the *Journal of Periodontology*. Insurance will typically cover either procedure, so patients won’t necessarily pay more for LANAP.

Lasers are also taking part in cosmetic treatments. Laser gum revision, for example, can reshape the gum lines in much the same way periodontists have traditionally done with a scalpel. So, patients with a gummy smile or long- or short-looking teeth can achieve a more proportioned look, says Joseph Zelig, a New York City-based cosmetic periodontist. “Think of the gums as a frame around a painting,” he says. “If the frame is broken, the painting won’t look good no matter how expensive it is.” The laser cauterizes the gum tissue, minimizing pain and bleeding and shortening recovery.

**Mini-implants.** Lasers aren’t the only game in town. Advances in miniature dental implants are making the replacement of decayed or missing teeth with dentures more palatable. “Mini-implants are designed for patients with limited bone in their jaws who have trouble holding in their dentures,” says Antenucci. In contrast to conventional implants, which must be anchored in the jaw and take several months to fuse with bone, titanium mini-implants can be inserted in a single visit and don’t require cutting the gums. And while conventional implants cost \$1,250 to \$3,000 per tooth, mini-implants can be just half that. Neither is typically covered by insurance.

Digital impression technology, another recent advance, is taking the goo out of dentistry. Crowns, bridges, and other restorative prosthetics require an impression of a patient’s teeth in order to fit correctly. This usually involves a paste or putty that takes several minutes to set. But a “virtual” impression removes the discomfort from that wait. In the new process, a digital camera scans a portion of the mouth and creates a 3-D image that precisely reflects the size and position of each tooth. Dentists with certain equipment can then produce a custom-tailored prosthetic on the spot. Others send the image to an off-site manufacturing facility, an approach that may take a couple of weeks but offers patients a wider selection of materials, like gold and porcelain. Some dentists may build the cost of the equipment and processing into the price of the restoration, making the work more expensive than conventional restoration work, which remains most dentists’ only offering.

When Martha Zeeman, 40, of Lake Forest, Ill., got fitted for a crown four years ago, she could barely tolerate the impression paste because of her strong gag reflex. So when she needed three crowns last fall, she became one of the first patients to receive a virtual impression using the recently approved iTero system. “There was no more unpleasant taste and definitely no more gagging,” she says.

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**Dr. Joseph Zelig, NEW YORK CITY-BASED COSMETIC PERIODONTIST**